

Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P04-76	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/JP2004/010437	International filing date (day/month/year) 15.07.2004	Priority date (day/month/year) 01.08.2003
International Patent Classification (IPC) or national classification and IPC C07D257/04		
Applicant TOYO KASEI KOGYO COMPANY LIMITED		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of **5** sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:

- a. ☐ (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:
 - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
- b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____

_____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2004/010437

Box No. I

Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language _____ which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☒ the international application as originally filed/furnished
- ☐ the description:
- pages _____ as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ the claims:
- nos. _____ as originally filed/furnished
- nos.* _____ as amended (together with any statement) under Article 19
- nos.* _____ received by this Authority on _____
- nos.* _____ received by this Authority on _____
- ☐ the drawings:
- sheets _____ as originally filed/furnished
- sheets* _____ received by this Authority on _____
- sheets* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-11</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>5, 6, 8-11</u>	YES
	Claims	<u>1-4, 7</u>	NO
Industrial applicability (IA)	Claims	<u>1-11</u>	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

Citations

Document 1: JP 09-505275 A (Glaxo Group Ltd.), 27 May 1997

Document 2: JP 11-502810 A (Glaxo Group Ltd.), 09 March 1999

Document 3: WO 2002/006263 A1 (Chugai Pharmaceutical Co., Ltd.), 24 January 2002

Document 4: Chemical & Pharmaceutical Bulletin, 1983, Vol. 31, No. 5, pages 1751 to 1753

Explanations

Claims 1 to 4 and 7

The inventions set forth in claims 1 to 4 and 7 are not disclosed in any of the documents that are cited in the international search report; therefore, said inventions are novel. However, the inventions in question do not involve an inventive step in the light of documents 1 to 4 cited in the international search report.

Documents 1 and 2 disclose methods for producing compounds that are represented by general formula (2),

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Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

wherein a compound represented by general formula (1) set forth in claim 1 of the present application in which A¹ signifies a hydroxyl group is reacted with a hexamethylenetetramine in the presence of a trifluoroacetic acid, a CHO group is introduced into the benzene ring by means of hydrolysis and then the aforementioned hydroxyl group is converted into an alkoxyl group. Meanwhile, document 3 discloses a method for introducing a CHO group into a hydroxyl group-substituted benzene ring, wherein a given starting compound is treated by means of a hexamethylenetetramine in the presence of an acid catalyst such as a trifluoroacetic acid or a methanesulfonic acid and then the product from said treatment is hydrolysed; therein, document 3 further indicates that it is preferable to employ a methanesulfonic acid as the aforementioned acid catalyst; that it is possible to use a compound in which the hydroxyl groups are protected as the starting compound; and that the method in question is preferred because it reduces the work load. Furthermore, documents 3 and 4 both present production examples wherein a methanesulfonic acid was actually employed as the acid catalyst.

As a result, it would have been obvious to a person skilled in the art to substitute a methanesulfonic acid or other such acid catalyst for the trifluoroacetic acid, and to employ a compound in which the hydroxyl groups are protected by means of alkyl groups or the like as the starting compound in the methods for the production of compounds that are represented by general formula (2) which are disclosed in documents 1 and 2.

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Claims 5, 6 and 8 to 11

The inventions set forth in claims 5, 6 and 8 to 11 are novel and involve an inventive step in relation to documents 1 to 4 cited in the international search report.

The compounds that are represented by general formula (2) other than the compounds that are also represented by general formula (8) set forth in claim 7 of the present application are not disclosed in any of documents 1 to 4, and the compounds in question cannot be said to have been obvious to a person skilled in the art in the light of the disclosures in documents 1 to 4.